

REMARKS

In view of the above amendments and the following remarks, reconsideration of the objections and rejections contained in the Office Action of September 24, 2008 is respectfully requested.

In order to make necessary editorial corrections, the entire specification and abstract have been reviewed and revised. As the revisions are quite extensive, the amendments to the specification and abstract have been incorporated into the attached substitute specification and abstract. For the Examiner's benefit, a marked-up copy of the specification indicating the changes made thereto is also enclosed. No new matter has been added by the revisions. Entry of the substitute specification is thus respectfully requested.

In item 2 of the Office Action, the Examiner objected to the drawings due to an informality. In particular, the Examiner asserted that the drawings did not show the drilling at two predetermined points each corresponding to a target point defined by pre-determined command coordinates, as recited in original claim 3. In view of this objection, Figure 5 has now been amended so as to show a second pre-determined point IM', with a second set of command coordinates. Because this feature was clearly disclosed in original claim 3 and in the specification, it is submitted that no new matter has been added by the amendments to Figure 5. Furthermore, in view of the submission of new formal Figure 5, it is respectfully submitted that the Examiner's objections to the original drawings have been overcome.

The Examiner objected to original claim 10 as failing to further limit the subject matter of a previous claim. However, original claim 10 has been cancelled - along with all of the other original claims - and a set of new claims 11-22 has been added. It is respectfully submitted that the Examiner's objection to the original claims is not applicable to the new claims.

The Examiner rejected all of original claims 1-10 on the grounds of non-statutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 7,191,030 (the '030 Patent). However, as noted above, all of the original claims have been cancelled and replaced with new claims 11-22, including new independent claims 11, 14, and 21.

For the reasons discussed below, it is respectfully submitted that the new claims are clearly patentable over the prior art of record.

In setting forth the double patenting rejections, the Examiner equated the process of *grinding* as described in the '030 Patent with the process of *drilling* as set forth in the present invention. In doing so, the Examiner dismissed the significant differences between a drilling operation and a grinding operation, and therefore also improperly minimized the significance of the features necessary for calibrating a *drilling* machine as compared to those necessary for calibrating a *grinding* machine.

As described on page 2, lines 14-24 of the original specification, "drilling" is a process in which material is removed around an axis - generally a vertical axis - in the thickness direction of an object. In particular, the drilling operation is performed at a particular *point*, resulting in the formation of a hole or a notch at the particular point. Thus, because drilling involves machining at a particular point, the process involves accurately identifying a particular set of coordinates at which the point is located where the drilling operation will be performed. To this end, each of new independent claims 11, 14, and 21 recites processes and components for calibrating a drilling machine to correct any error in the coordinates of a target drilling point by laying out various coordinate systems so as to identify the location of a *target drilling point*, a *real drilling point*, and then correcting the *offset between these two points* so as to produce an accurate drilling operation.

In contrast, the '030 Patent relates to a *grinding* operation in which ***angular*** offsets are identified and corrected in order to improve the machining operation. The '030 Patent does not claim a method of calibrating a *drilling* machine, or a *drilling* calibration device, or a *drilling* system. Moreover, the '030 Patent does not claim or even suggest analyzing an image using an image analysis unit to measure an *offset between a position of a real drilling point* and a position of a *target drilling point*. The required modifications to adapt a calibration system and process for a *drilling* operation, in which an *offset between drilling points* is identified and corrected, in order to make such a system and process applicable to grinding machine using *angular offsets based on the position of a rotating radial axis* as claimed in the '030 Patent would require

significant experimentation and development. Furthermore, the templates used to calibrate a grinding machine such as that of the '030 Patent would clearly require significant modifications to be suitable for use with a drilling tool, and the components associated with the template, such as an image analysis unit, would also have to be significantly adapted by complex experimentation. Therefore, it is submitted that the claimed invention of the '030 Patent does not even suggest the invention as now recited in new claims 11-22 of the present application. Therefore, the Examiner is respectfully requested to withdraw the double patenting rejections set forth against original claims 1-10.

In addition to the above double patenting rejections, the Examiner also rejected claims 1, 2, 4-6, and 8-10 as being unpatentable over the Guillermin reference (U.S. 5,806,198) in view of the Kilian reference (U.S. 5,304,773), and the Susnjara reference (U.S. 6,480,757); and rejected claim 7 as being unpatentable over the Guillermin reference in view of the Kilian reference, the Susnjara reference, and further in view of the Haga reference (U.S. 5,497,234). However, as noted above, the original claims have been cancelled and replaced with new claims 11-22. For the reasons discussed below, it is respectfully submitted that the new claims are clearly patentable over the prior art of record.

The Guillermin reference is directed to a method of calibrating a *grinding* machine similar to the '030 Patent noted above, rather than a *drilling* machine as in claims 11-22. Again, although the Examiner equated a *grinding* operation to a *drilling* operation, there are significant differences between these two types of operations which would prevent one of ordinary skill in the art from adapting a calibration process for a grinding operation to a calibration process for a drilling operation. More particularly, the Guillermin reference does not teach or even suggest analyzing an image using an image analysis unit to measure an *offset between a position of a real drilling point and a position of a target drilling point* so as to compensate for, and thereby correct, the offset in a *drilling* operation. In this regard, as also noted above with respect to the Examiner's double patenting rejections, because *drilling* is a machining process relating to specific *points*, it significantly differs from grinding operations such as that disclosed in the Guillermin reference.

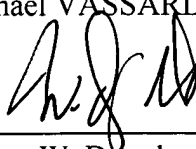
Nonetheless, the Examiner applied the Kilian reference, the Susnjara reference and the Haga reference as teaching features not taught in the primary Guillermin reference. However, none of these references relate to calibration of a *drilling* method or machine, and particularly do not teach or even suggest analyzing an image using an image analysis unit to measure *an offset between a real drilling point and a target drilling point*. Therefore, it is respectfully submitted that the Kilian reference, the Susnjara reference and the Haga reference do not correct the deficiencies in the Guillermin references noted above.

Moreover, it is submitted that one of ordinary skill in the art could not readily and without extreme experimentation incorporate the teachings of the Kilian reference or the Susnjara reference into the Guillermin reference. For example, the system of the Kilian reference includes large side frames 10, 12 and a laser head support carriage 14 with an optical sensor 120. One of ordinary skill in the art would have to significantly reduce the size of this system, while also significantly adapting its drive mechanism, wiring, and functioning, in order to integrate those components into the grinding machine of the Guillermin reference. Similar concerns are also applicable to the features of the Susnjara reference. Therefore, it is submitted that there is no apparent reason to even attempt to combine the teachings of the Kilian reference and the Susnjara reference with the teachings of the Guillermin reference. Accordingly, because the combination of the prior art does not teach or even suggest all of the features recited in new claims 11-22, and because the significant modifications in design and operation would prevent one of ordinary skill in the art from even attempting to incorporate the teachings of the Kilian reference and the Susnjara reference into the Guillermin reference, it is submitted that the combination of prior art as applied by the Examiner does not render new claims 11-22 unpatentable. Consequently, it is respectfully submitted that claims 11-22 are clearly patentable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. However, if the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact the Applicant's undersigned representative.

Respectfully submitted,

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